



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029**

12 AUG 2011

Ms. Ginger Mullins, Chief
Regulatory Branch
Huntington District
U.S. Army Corps of Engineers
502 Eighth Street
Huntington, West Virginia 25701

Re: Public Notice No. 2006-00100-1-TUG; ICG Eastern LLC; Jennie Creek Surface Mine and Preparation Plant; Mingo County, West Virginia

Dear Ms. Mullins:

The U. S. Environmental Protection Agency (EPA or Agency) has reviewed the Public Notice for ICG Eastern LLC's proposed Jennie Creek Surface Mine and Preparation Plan located near the town of Breeden, in Mingo County, West Virginia. This permit application had been identified as one of 23 projects in West Virginia to undergo review through the Enhanced Coordination Process provided for by the June 11, 2009 Memorandum of Understanding between the Department of the Army, the EPA, and the Department of Interior. As a part of that process the applicant met with EPA, the U.S. Army Corps of Engineers (Corps), U.S. Fish and Wildlife Service, and the West Virginia Department of Environmental Protection (WVDEP) in January 2010, to discuss the project proposal. The application discussed in January 2010 was withdrawn by the applicant on October 7, 2010. The application was resubmitted on March 3, 2011, and a Public Notice was issued June 13, 2011.

EPA's review and comments, herein provided, are based upon the Public Notice issued June 13, 2011, the permit application, and supplemental documentation including the proposed Compensatory Mitigation Plan (CMP) and Environmental Information Document (EID).

EPA's review is intended to help ensure that the proposed project would meet the requirements of the Clean Water Act (CWA). The CWA Section 404(b)(1) Guidelines at 40 C.F.R. Part 230 (the Guidelines) provide the substantive environmental criteria against which this application must be considered. Fundamental to the Guidelines is the premise that no discharge of dredged or fill material may be permitted if: (1) it causes or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable state water quality standard; (2) a practicable alternative to the proposed discharge exists that would have a less adverse impact on the aquatic ecosystem; or (3) the discharge would cause or contribute to significant degradation of the waters of the United States.

The proposed project includes the construction, operation, and reclamation of the Jennie Creek Mining Complex. The project proposes to utilize a combination of surface extraction methods including area and contour/highwall mining methods resulting in impacts to 22,305 linear feet of jurisdictional stream channels within tributaries of Jennie Creek, Jacks Fork, Turkey Creek, and Breeden Creek within the Twelvepole Creek and Tug Fork watersheds. As proposed, the project would consist of the construction of twelve (12) valley fills, one (1) refuse fill, and seventeen (17) in-stream sediment ponds. The proposal includes the placement of fill material into 11,666 linear feet of intermittent stream and 2,262 linear feet of ephemeral stream channel "to facilitate construction of the underdrain structures for the valley fills and refuse fill." The proposal would also include the temporary placement of fill material into 8,297 linear feet of intermittent stream and 80 linear feet of ephemeral stream channel to facilitate the construction of the embankment for the sediment control structures.

The proposed project area is located in a forested area in a relatively undisturbed part of northern Mingo and southern Wayne Counties. Eleven of the valley fills and the one refuse fill are proposed in unnamed tributaries of Breeden Creek, Turkey Creek, and Jacks Fork (via Turkey Creek) which flow into the West Fork Twelvepole Creek. The West Fork Twelvepole Creek has been listed on the 2008 West Virginia Section 303(d) list for biological impairment. West Fork flows into Twelvepole Creek which has been listed as impaired for biological, fecal coliform, and iron. One fill is proposed in an unnamed tributary of Jennie Creek, which flows into the Tug Fork River, and is included in the approved West Virginia Tug Fork River Total Maximum Daily Load (TMDL) for pH and metals.

Turkey Creek was sampled by the WVDEP downstream of the project area in April 2003. The sampling station was located within the Cabwaylingo State Forest, which is downstream of Jacks Fork. The sampling results indicated a West Virginia Stream Condition Index (WVSCI) score of 93, the conductivity was measured as 55 $\mu\text{S}/\text{cm}$, and the Rapid Bioassessment Protocol (RBP) score was 154 (optimal-suboptimal). Eight unnamed tributaries are proposed to be filled upstream of this sampling location. Jennie Creek was sampled in June 2005 by WVDEP where the haul road for the Jennie Creek Complex joins Jennie Creek. The data show impairment to the benthic community but relatively good water quality and habitat: the WVSCI score was 53, conductivity was 279 $\mu\text{S}/\text{cm}$, and the RBP score was 125 (suboptimal). Based on the data provided in the Section 404 permit application, the water quality in the ephemeral and intermittent tributaries proposed to be filled is very good, with an average conductivity of 62 $\mu\text{S}/\text{cm}$.

The project proposal does not appear to differ materially from the project that was discussed with the resource agencies in January 2010 and subsequently withdrawn. Based on the information and documentation provided, EPA offers the following general comments. Detailed technical comments are set forth in the enclosure.

Overall, much of the material provided by the applicant is outdated, lacks essential information, and/or is inconsistent. It appears that the applicant's efforts to rely upon previous documentation for the project may have resulted in submission of outdated and incomplete information. For example, the EID does not provide any information or data about the resources to be impacted by the project. The applicant provided the Stream Buffer Analysis and

Cumulative Hydrologic Impact Assessment from 2004 that discusses only a portion of the currently proposed project, Jennie Creek No. 2, and not the entire mine complex under consideration for this application. The EID references stream creation as part of the mitigation plan; however, while stream creation was part of earlier mitigation proposals, the CMP has been revised to no longer include stream creation. Additional discussion of the deficiencies with the information provided can be found in the enclosure to this letter.

The applicant's stated project purpose is to extract coal reserves from five coal seams. The CWA Section 404(b)(1) Guidelines provide that a discharge of dredged or fill material shall be permitted only if it represents the least environmentally damaging practicable alternative, and that upland alternatives are presumed to exist for non-water dependent activities that do not require the use of the aquatic ecosystem, including jurisdictional wetlands. See 40 C.F.R. 230.10(a). While the alternatives analysis purports to describe an array of mining extraction methods, it is not clear that the least damaging practicable alternative has been selected. For example, the alternatives analysis presented an alternative that would involve area mining of all seams overlying and including the Mercer coal seam, combined with underground mining of the Coalburg seam. The applicant deemed this alternative impracticable because the area and underground mining could not be conducted simultaneously; however, the applicant does not explain why mining must occur simultaneously. The EPA therefore recommends that the applicant provide a full evaluation of this, or other alternatives, including an evaluation of mining of all the seams overlying and including the Mercer seam, reclaim, and then initiate the underground mining of the Coalburg. This evaluation should include a comparison of expected environmental impacts.

In addition, the alternatives analysis did not include a discussion of on-site and off-site excess spoil locations. The EPA recommends that the applicant's alternatives analysis discuss a full array of potentially available practicable alternatives that include a combination of mining methods and on-site and off-site disposal options and a comparison of aquatic resource impacts. Additional comments regarding the alternatives analysis can be found in the enclosure provided.

The EPA continues to have concerns that the information provided does not demonstrate that the project will not cause or contribute to significant degradation of the waters of the U.S. See 40 C.F.R. 230.10(c). The best information available to the Agency, including published, peer-reviewed studies, indicates that surface mining impacts on aquatic life are strongly correlated to ionic strength in the Central Appalachian stream networks. Increased conductivity generally impairs aquatic life use, is persistent over time, and cannot be easily mitigated after-the-fact or removed from stream channels. While the EPA was able to ascertain some information from sources such as the CMP and WVDEP sampling, the EID provided by the applicant lacks sufficient information regarding the resources that would be impacted as well as an analysis and description of water quality impacts that may be expected from this operation. Accordingly, the EPA recommends that the applicant include a discussion of the aquatic resources that are proposed to be impacted and adjacent mine data to inform expectations regarding the effects that could be anticipated as a result of the Jennie Creek Surface Mine's construction and operation. In order to address this concern, the EPA recommends consideration of construction techniques or best management practices intended to protect water quality and prevent significant degradation of the aquatic ecosystem. The EPA also recommends that further

consideration be given to “sequencing” valley fills, that is, construction of valley fills one at a time with a demonstration that water quality has been protected before the permittee begins construction of subsequent valley fills. While the EPA recognizes the permittee’s concern that there may be some limiting factors that could affect the practicability of sequencing for the proposed alternative, operational design alternatives that may be more conducive to sequencing opportunities should be fully explored. The EPA further recommends that the applicant develop and provide a detailed monitoring plan and an adaptive management plan that includes appropriate thresholds to trigger adaptive remedial actions for mining activities to address and prevent potential significant degradation and water quality issues. Additional comments regarding significant degradation and water quality are provided in the enclosure.

As noted in the Public Notice, the applicant has applied for a Section 401 certification and a revised National Pollutant Discharge Elimination System (NPDES) permit from WVDEP. As noted above, the Section 404(b)(1) Guidelines contain an independent requirement that water quality be protected both in preventing significant degradation (40 C.F.R. 230.10(c) and preventing violations of water quality standards (40 C.F.R. 230.10(b)). The EPA’s review of the water quality impacts of this project, and our recommendations regarding the need for water quality conditions in the Section 404 permit, will be informed by the extent to which the State-issued NPDES permit addresses the significant potential for water quality impacts and significant degradation as described above.

As stated above, approximately 22,305 linear feet of jurisdictional stream channel would be impacted by the planned mining activities. In the evaluation of the potential for on-site mitigation, the applicant has determined that the permit area and adjacent permit areas would not present mitigation sites that would have a high likelihood of success. The applicant has developed a CMP that includes the re-establishment of the streams after pond removal, and to provide compensation for the permanent stream impacts, the applicant proposes 19,600 linear feet of Level III off-site mitigation within Turkey Creek. Level III restoration is defined by the West Virginia Stream and Wetland Valuation Metric as intensive floodplain re-establishment, habitat improvement, and bank stability. The applicant proposes to utilize stabilization techniques, provide a variety of velocity-depth regimes, and relocate an access road out of the upper 3,500 feet. However, apart from the proposal to relocate an access road out of the upper 3,500 feet, it is unclear from the information provided that Turkey Creek is in need of the types of enhancements proposed or that the proposed enhancements will offset the impacts expected from the project. Based on WVDEP data, it appears that conditions in Turkey Creek downstream of the project site reflect little impact and support a high level of biological function, as evidenced by a WVSCI scores of 93 and habitat scores in the optimal-suboptimal range. The CMP should therefore identify and document the need for structural improvement in Turkey Creek beyond removal of the access road. As currently drafted, the benefit of 19,600 feet of enhancement claimed by the applicant is not evident from the narrative and plans submitted. Additionally, the structural enhancements may be of limited value if the stream and riparian buffer cannot be adequately protected from future encroachments. These issues should be addressed in the CMP.

In addition, it is not clear that structural enhancements will offset anticipated water chemistry and related biological impacts from the project, including increased conductivity and other parameters. Quantifiable biological and chemical endpoints should be used to demonstrate

that the restoration has been successful along with an assessment of stream structure and habitat. In addition, protection of the proposed mitigation should be obtained prior to permit issuance. Additional comments regarding the proposed CMP are provided in the enclosure.

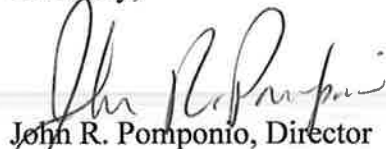
Given the past, present, and proposed future mining activities within the West Fork Twelvepole and Tug Fork subwatersheds (HUC-12), EPA recommends that the Corps conduct a thorough cumulative effects analysis that includes a detailed presentation of past, present, and reasonably foreseeable activities. *See* 40 C.F.R. 230.1 & 230.11(g). Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time. We strongly suggest an approach that would manage and link proposed projects to overall water quality and habitat improvement on a sub-basin and subwatershed basis. In addition to cumulative effects, consideration should be given to environmental justice (EJ) as required under Executive Order 12898. Consideration should be given to public interest factors such as economics, aesthetics, safety, and general welfare of the public with a particular emphasis on how low-income or minority populations would be affected. Additional comments regarding cumulative impacts and EJ are provided in the enclosure.

EPA is concerned that the project, as proposed, may result in substantial and unacceptable impacts to aquatic resources of national importance as covered in Part IV, paragraph 3(a), of the 1992 CWA Section 404(q) Memorandum of Agreement between EPA and the Department of the Army. In addition, we believe this proposal may be a strong candidate for preparation of an Environmental Impact Statement (EIS), considering the large scale of the proposed impacts and the outdated and incomplete nature of much of the supporting information provided by the applicant. In addition, as set forth above and in the enclosure, it is not clear that the compensatory mitigation that currently is proposed would support a Finding of No Significant Impact.

EPA is committed to working with you and the applicant to assure that the proposed impacts resulting from this project represent the least environmentally damaging practicable alternative, consistent with the CWA Section 404(b)(1) Guidelines and that significant degradation is prevented. Please find enclosed our project-specific comments and questions.

Thank you for the opportunity to review and comment on the Public Notice for the Jennie Creek Surface Mine. If you have questions regarding these comments please contact Ms. Jessica Martinsen, Team Leader, at 215-814-5144 or by email at martinsen.jessica@epa.gov.

Sincerely,



John R. Pomponio, Director
Environmental Assessment Innovation Division

Enclosure

Comments for ICG Jennie Creek Surface Mine; PN 2006-00100-1-TUG

Environmental Information Document

General Comments

- The EID did not provide any description of the resources proposed to be impacted. Basic data regarding the streams was not mentioned within the EID and should be included. Data that could be used to describe the streams proposed for fill, including data to characterize the impact areas, needs to be provided. The applicant should provide water quality data from adjacent mine areas. The only reference to adjacent mine data was provided on pg. 44 section 4.15, but no specific data was provided. Data should include information for a full range of water quality parameters.
- Are the industry-developed practicability standards or criteria that were used in the alternatives analysis the most current criteria? Are they still applicable given current market conditions (e.g., 20:1 ratio standard for area mining), etc?
- Pg. 33. The applicant states that the necessary static safety factor is 1.5 for this operation. Often the static safety factor of 1.3 is used. What is the difference? Why is 1.5 the most appropriate value here?
- Pg. 38 Section 4.4. The EID did not describe the proposed materials handling plan. The EID does not take into account the strata that may result in high Total Dissolved Solids (TDS) production, leading to toxic conditions.
- Pg. 38 Section 4.5. What does “in a controlled manner” mean?
- The applicant did not provide copies of the Materials Handling Plan, the National Pollution Discharge Elimination System (NPDES) Plan, or the Water Monitoring Plans. Please provide these.
- Pg. 41 Section 4.12. The applicant indicated that the valley fill lifts would be placed “in a controlled manner.” However, the applicant indicates that the method of side-dumping would be conducted in a manner to minimize sediment loading. How does this method of spoil management differ from end-dumping? In what ways does this method minimize sediment loading as effectively as or better than bottom-up construction methods?
- Pg. 44 Section 4.15. The applicant indicates that the NPDES point-source outlets would be used to create stream channels. Based on the CMP, EPA understood that stream creation was no longer being proposed and was not included in the current compensatory mitigation plan. If there are still plans for such mitigation, EPA requests a copy of the plans, a monitoring plan, well defined success criteria, and water quality parameters, specifically for conductivity.
- Pg. 45 Section 4.16. The applicant states “...there are many incentives for the operator to limit the open and un-reclaimed valley fill acreage by managing the number and longevity of such active fills.” Please specify the expected benefits or improvements to the operator.
- The applicant provided a copy of the Cumulative Hydrologic Impact Assessment (CHIA) as part of the permit support documentation. However, it was only provided for the Jennie Creek No. 2 surface mine, not for the entire complex. The CHIA was written in 2004. This analysis is outdated, and does not take into account current best-available, peer-reviewed science.

- The applicant provided the Buffer Zone Analysis (BZA) as part of the permit support documentation. However, the BZA was only provided for the Jennie Creek No. 2 Surface Mine and not the entire complex. This document was written in 2004.
- Pg. 56. What is the life of the preparation plant? Does this permit proposal account for all future refuse disposal needs?
- The refuse disposal area is for coarse material disposal. Is slurry generated? Where is that material going? Are there future plans to construct a slurry impoundment within or nearby the project area?
- Pg. 50 Section 4.33. Reference is made to the Forestland Planting Plan. Does this plan resemble the Appalachian Regional Reforestation Initiative's Forestry Reclamation Approach? Please provide the planting plan.
- Pg. 63 Section 7.0. The applicant states that "...potential success of mitigation efforts along Jennie Creek appear to be outside our control and therefore not appropriate for this project." EPA requests that this be further explained.

Alternatives Analysis

- The alternatives analysis (AA) lacks any discussion of offsite disposal options. Offsite disposal options are not mentioned until pg. 38 Section 4.3. The AA needs to discuss the options investigated and specify why they are not practicable options.
- The AA presented an alternative that would involve area mining of all seam overlying and including the Mercer coal seam combined with underground mining of the Coalburg seam.
 - This alternative would result in 950,000 tons less coal recovered compared to the current preferred alternative, but would also generate less excess spoil material. It is unclear how much total excess spoil material would be generated compared to the preferred alternative. It is also unclear exactly how many valley fills would be required. However, the applicant only indicates this alternative "would require approximately the same number of fills as the preferred alternative." The applicant should provide more details, including all spoil volumes, for comparison of likely impacts associated with the alternatives.
 - What is the reduction in impacts to waters of the U.S. of this alternative?
 - Can the applicant first surface mine down to the Mercer seam, reclaim, and then initiate the underground mining of the Coalburg? The two different mining techniques do not necessarily have to occur simultaneously.
- Pg. 35. Why were the lengths of the valley fills significantly reduced? How does this minimize impacts to the aquatic resources? This leads to less capacity available below the Coalburg Seam, leading to the conclusion that more fills are necessary. Are there alternatives available that may increase the length of any individual valley fill, but reduce the number of fills required and reduce the total stream impacts? By underground mining the Coalburg seam, the required fills may be able to be pushed further up the valley. If the proposed number of fills is not needed or can be minimized, then the proposal should be modified in order to be considered the LEDPA.
- Pg. 16. As the Revised Preferred Alternative "represents a substantial reduction in the scope and scale of the originally proposed project," what is the difference in percent of

reserves mined between the Composite Original Alternative and the Revised Preferred Alternative?

- The applicant provides no detail of how/why certain fills were eliminated as opposed to others. What criteria were used? Please provide more discussion regarding how the Preferred Alternative mine layout was determined.
- Pg. 34. The document does discuss consideration and evaluation as to whether “sequencing” of valley fills is a practicable method of operation. Sequencing of the valley fills has been determined by the applicant to infeasible. EPA strongly suggests that the applicant reevaluate the sequencing approach. The applicant does not provide any other alternative to address concerns regarding impacts to water quality and ensuring that if problems arise resulting from the valley fills there are sufficient opportunities to prevent significant effects that are caused by these fills.
- The applicant does state that the operation would progress from watershed to watershed. Could sequencing be evaluated based on the watersheds being mined?
- It appears that the contour mining of the Coalburg seam and the limited capacity available below the Coalburg is one factor limiting the ability to construct valley fills in a “sequenced” manner. Again, would mining the Coalburg seam by underground methods allow for greater opportunity to “sequence” valley fill construction?
- The applicant did not provide any alternatives analysis discussing construction alternatives, or design alternatives available that could be employed onsite that would significantly help to address or minimize potential water quality impacts.

Water Quality

- Pg. 39 Section 4.7. The applicant states that methods to minimize water quality impacts would take place to comply with Section 401, 402, and the NPDES permit requirements. The applicant indicates that the State’s Narrative WQ permitting guidance will be applied to modifications to the NPDES and Surface Mine Control and Reclamation Act (SMCRA) permits, which will address monitoring and other issues related to compliance with WV’s narrative water quality standards. The Section 404(b)(1) Guidelines require consideration of water quality at both 40 CFR 230.10(b) and 40 CFR 230.10(c). The Corps permit should ensure that adequate monitoring is conducted.
- Pg. 44 Section 4.15. The applicant says that water monitoring plans have been designed for surface and ground water. These monitoring plans should be provided.
- It is unclear if selenium is a potential concern for this area. If so, what methods are being incorporated to address this issue?
- The applicant indicates on pg. 44 that “[a]n increase in dissolved solids/specific conductance is expected during the mining cycle but should decrease over the long-term during the post-mining phase, when reclamation of the site has been completed.” Numerous scientific studies have documented the causal link between surface coal mining activities and elevated levels of TDS and conductivity. The applicant has not stated how it will ensure that the asserted temporary increase in TDS/conductivity levels will not cause significant degradation of the aquatic ecosystem. The applicant should provide information regarding specific actions that are being employed to address water quality concerns, especially conductivity, and data regarding the extent to which conductivity is likely to decrease after reclamation is complete.

- EPA's final report, *A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams*, identifies a conductivity level in Appalachian headwater streams associated with significant biological degradation from loss of stream life. Specifically, this peer-reviewed study concludes that 5% of native macroinvertebrate genera are extirpated where the conductivity level reaches 300 $\mu\text{S}/\text{cm}$. The findings of Pond et al. (2008), which indicate that substantial aquatic life effects have already occurred when conductivity levels reach 500 $\mu\text{S}/\text{cm}$, also represent relevant scientific information for evaluating whether an effect may rise to the level of significant degradation of the aquatic ecosystem. If the applicant believes that these values are not applicable to this site, the applicant should provide site-specific documentation and recommended values.
- An adaptive remedial action plan should be developed to address increases in conductivity and any other parameters of concern to be implemented if water quality protection values are exceeded. The adaptive management plan should include multiple trigger points to ensure that remedial actions are initiated in advance of water quality impacts reaching levels associated with causing or contributing to a violation of water quality standards or significant degradation.
- In light of the science described above, we recommend that any permit issued would include adaptive management conditions that requiring adaptive management actions to protect against elevated conductivity that would be triggered when conductivity in the effluent from the sediment pond reaches or trends toward levels that may cause downstream reaches to exceed appropriate science-based conductivity benchmarks (such as 300 $\mu\text{S}/\text{cm}$ contained in EPA's final conductivity benchmark report or 500 $\mu\text{S}/\text{cm}$ as outlined in Pond et al. (2008).) If the applicant believes that these values are not applicable to this site, the applicant should provide site-specific documentation supporting why not, as well as what recommended values would be more appropriate.
- Absent site specific information as to why these values should not apply to this project, based on the best scientific information available, EPA recommends that 300 $\mu\text{S}/\text{cm}$ be used as the first trigger for implementation of the AMP. At this trigger level, a previously-identified set of actions would be employed with the objective to prevent conductivity values from rising further and to maintain levels below 500 $\mu\text{S}/\text{cm}$.

Cumulative Impacts Analysis

- The permit support documentation does not provide any cumulative impact analysis. The applicant only provided general statements in the EID indicating that cumulative impacts were not expected.
- A cumulative impact analysis should be undertaken to describe the current state of the ecosystem and the likely effects, including impacts to the sub-watersheds from filling of streams and potential impacts to private drinking water wells and other drinking water supplies.
- EPA recommends that the analysis include function and habitat and the effects of the hydrologic modifications to the sub-basin and sub-watersheds.
- The impacts of deforestation on water quality, water quantity, and other ecological conditions within the sub-basin and sub-watersheds should be included in the cumulative impacts analysis.

- These impacts should be compared to the attributes of healthy watersheds in the ecoregion with a goal towards assuring that the sub-basin and sub-watersheds within which the project is proposed will not be impacted beyond its current condition.
- The Council on Environmental Quality in 40 CFR 1508.7 defines cumulative impacts as “impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable action.” The cumulative impacts analysis should include all of these types of actions. Reasonably foreseeable actions include other proposed mines in the watershed.
- Cumulative impact analysis could help identify areas within the watershed that may need improvement. This analysis could then guide possible mitigation opportunities that would lead to watershed condition uplift.

Environmental Justice

- The applicant provided very little information regarding environmental justice concerns and no analysis as to the potential effects to potential environmental justice communities.
- The Jenny Creek Surface Mine project intersects two block groups outside of Breeden in Mingo County, WV. According to the 2000 United States Census these block groups contain 2,028 people.
- The average percent of people living in poverty for those two block groups is 42.5%. The average per capita income is \$10,709, which is almost \$6,000 less than the West Virginia state average (\$16,477) and less than half the national average (\$21,587). In fact, the median family income in one of the block groups is less than the national average for per capita income.
- Moreover, 24.6% of the residents of Mingo County as a whole live below the poverty line which exceeds both West Virginia (17.4%) and U.S. (13.2%) averages. Accordingly, additional analysis of the potential for disproportionately high and adverse effects on these low-income populations needs to be conducted.
- A characterization of the economic status of residents near the site, analysis of the economic or employment benefits anticipated as a result of this project, and an analysis of the conditions and subsequent potential effects that would result from the project, including, as appropriate, any effects relating to the proximity of the blasting zone, locations of discharges of fill material, truck traffic, noise, fugitive dust, and habitat loss should be conducted.
- Additional consideration must also be given to these activities’ potential impacts on subsistence fishing, hunting, foraging and gardening in the area affected by the project.
- Additional information is needed concerning sources of drinking water for the affected populations (including municipal water supplies and private sources of drinking water including streams and/or wells). Specifically, according to the 2000 U.S. Census, there are 37 households located in the block groups which contain the Jenny Creek Mine Project that do not have plumbing. This suggests these residents rely on nearby streams for sources of drinking water. Special consideration must be given to the affects the Jenny Creek Mine Project will have on these populations.
- It is important that consideration be given as to whether these impacts will range over a broad area or will be concentrated in particular areas. Detailed maps outlining the

residential areas in relation to these activities may help in conducting this evaluation.

Compensatory Mitigation Plan

General Comments:

- The locations of the impact areas, various sampling points, monitoring points, “improvement points” and their relation to each other were not evident. To clarify, a table with coordinates of each sampling location should be indicated.
- Color photographs clearly documenting stream condition should be supplied at each sample, impact, and restoration area monitoring point. In addition, it would be helpful to include a map or plan showing the location and direction of each photograph.
- Using the data collected for the Section 404 permit application, it appears that water quality in the ephemeral and intermittent tributaries to be filled is very good, with an average conductivity of 62 μ S/cm. Conductivity has been shown in the scientific literature to be a solid surrogate for water quality and the health of the aquatic community in these Appalachian watersheds. These headwaters currently offer ameliorating dilution to receiving waterbodies. Within each of these watersheds (Jennie, Turkey, Breeden), adverse downstream impacts to aquatic life can be expected from the proposed operation.
- In addition, the evidence to date has not shown that loss of high gradient headwater streams can be effectively mitigated. Therefore, impacts to these streams should be avoided and minimized as much as possible.

Benthic Macroinvertebrate Data:

- The consultant sampled benthic macroinvertebrates in November 2005, and this data is now almost six years old. This may not be representative of the current conditions. Moreover, as set forth below, this data was collected outside the index period for WVSCI.
- The applicant states that baseline benthic sampling was conducted in accordance with “*Interim Chemical/Biological Monitoring Protocol for Coal Mining Permit Applications (January 19, 2000)*.” However, this protocol was updated by WVDEP, WVDNR, and EPA Region III in November 2008 to address errors in the original protocols, including sampling time frames, data submittal format, and to require genus-level benthic identifications for coal mine permits. While the consultant collected within the index period as per the Interim Protocol at the time, this index period has subsequently been shortened due to problems identified with sampling after October 15.
- The *Standard Conditions for Environmental Assessments on Wadeable Streams* for the WV scientific collectors permit currently requires that benthic sampling be conducted between April 15 and October 15. This time frame coincides with the calibration of WVSCI scoring criteria. Scores determined for streams outside of this index period are not reliable. (<http://www.epa.gov/region03/mtntop/pdf/finalwvprotocol.pdf>)
- It appears that WVSCI was calculated with less than 100 individuals in many cases, which is not advised. WVSCI becomes a less reliable metric when less than 100 individuals are used.

- The consultant indicated that an attempt was made to resample benthic macroinvertebrates in 2008 but they were unable because streams were too dry. November 2005 was also very dry; precipitation in that month was only about 50% of normal. As a result, stream flow was only 42% of the average over a 20 year period. Therefore, the sampling effort may not reflect the normal condition of the streams.
- Due to these issues, EPA recommends that the applicant resample all sites during the index period using the updated protocol. Small headwater streams are best sampled in April in this ecoregion to provide the best possible information on the macroinvertebrate community and aquatic life use potential. Specific dates, coordinates of sampling locations, and climatic data should be indicated. Genus-level data also should be collected.
- The coordinates provided for impact sites in the Stream and Wetland Valuation Metric (SWVM) are not correct. The coordinates provided place the sites in the East Fork Twelvepole Creek watershed, nearly four miles from the project area. The coordinates in the HGM data sheets appear to be correct, but it is not clear how these correlate with sampling locations (there are often multiple HGM points for each fill and only one RBP/WVSCI score). Correct latitude and longitude for each benthic macroinvertebrate sampling location must be provided.

Habitat and Structural Assessment:

- The habitat assessment data provided does not clearly characterize the proposed streams to be impacted. The habitat RBP scores that are provided by the applicant are significantly lower than would be expected based on the apparent location and land cover. Furthermore, it is not clear that the sample locations were representative of the reaches to be impacted. Clear photo documentation of the streams to be impacted should be provided and any sources or causes of impairment should be identified.
- The highest RBP habitat score was 126 for Fill 22 (UT Breeden Creek.) This suboptimal score was incorrectly identified as “considered marginal” on page 15.
- The applicant stated that the RBP values were recorded at all sites during November 2008 when the streams were dry, so channel flow status is zero at each site. This is an inappropriate use of RBP because the habitat metrics were not intended for ephemeral streams or for use in intermittent streams when the stream is dry. Since the data were collected during a dry period, the RBP habitat metric is unreliable; therefore, it cannot be used as baseline data. The low scores may not be representative of the actual condition and may result in calculation of fewer mitigation credits than needed.
- Embeddedness could also be included as a parameter that is not water dependent, but in this data set the score for embeddedness does not seem correct. A score of 2 indicates that the stream channel is almost completely surrounded by fine sediment. This may have been misinterpreted due to the fact that the stream was dry. The applicant should provide photos of these sites to verify the habitat scores.
- In order to document the ecological resource potential in these streams, investigators should avoid dry periods. These sites should be sampled at a different time of year. Ideally, these streams should be studied and evaluated in the spring index period to fully document biotic and functional potential. Alternatively, the applicant could include the parameters that are not water dependent, and provide an average score (not a total). The

average score could then be placed into one of the four categories. If we averaged scores for sediment deposits, channel alteration, bank stability, bank vegetation, and riparian zone, we would get an average score of 11 which would place the site into the “sub-optimal” range rather than “marginal.”

- It is not clear whether the functional assessment data in the application provide an accurate accounting to adequately compensate for resource loss. The applicant initially used Interim Functional Assessment Approach (IFAA) to assess the sites. EPA has concerns regarding the utility of IFAA and has serious reservation regarding its relevance for calculating debits/credits for mitigating streams impacted by surface coal mining and valleyfills. The FCI Calculator for High-Gradient Headwater Streams in eastern Kentucky and western West Virginia HGM assessment was added to the end of the 2009 application. The addition of the 2010 and 2011 HGM data sheets and WVSWM did not clarify whether adequate mitigation is being provided. Due to the issues noted above regarding the RBP and WVSCI data, the accuracy of the credits and debits calculated by WVSWM is in doubt.

Proposed Compensatory Mitigation

- The compensation for the impacts is to be a series of enhancements along Turkey Creek. The proposed enhancement reach is upstream of the monitoring location described above, where WVSCI is 93 and RBP is 154. Restoration is not likely to be needed in this reach. EPA therefore recommends that mitigation be considered elsewhere in order to result in meaningful benefits to the aquatic community. For example, mitigation could be directed to a site where water quality improvements could be made to compensate for the loss of dilution resulting from this project.
- The CMP states “It is the intent of the restoration sites to help restore critical functions in the watershed for the sustainability of the Turkey Creek watershed, which is expected to result in structural, habitat and functional improvements.” No evidence was presented to demonstrate that the proposed work will restore critical functions in the watershed, especially considering the loss of headwater streams and water quality impacts from mining. In order to restore critical functions, the patterns and causes of biological impairment should be explored. While structural improvements may be helpful, they do not usually address the cause of the problem. The root cause of water quality or habitat impairment should be identified and addressed in the mitigation plan if possible.
- The benefit of the proposed enhancement may be overstated. While the proposal of removing 3,500-feet of road from the stream is an obvious improvement, the stated benefit of 19,600-feet of restoration is not evident from the narrative and plans submitted. Additionally, the stream enhancements may be of limited value if the stream and riparian buffer cannot be adequately protected from future encroachments.
- The goals and objectives of the CMP should be clearly defined and measureable. The primary goal is identified as “to adequately and appropriately offset impacts proposed at Jennie Creek Surface mine.” However, the CMP does not demonstrate that the proposed plan is adequate or appropriate. Overall, the mitigation plan only proposes physical channel reconfigurations and the plan fails to address chemical restoration to which the indigenous and sensitive headwater fauna will most strongly respond. Physical habitat enhancements only play a partial role in the overall structure and function of stream ecosystems. A loss of resource will occur.

- The success of the mitigation is to be measured by achieving predicted habitat scores. However, RBP scores can be subjective and do not demonstrate that the streams have been fully restored to a functioning ecosystem. Quantifiable biological and chemical endpoints should be used to demonstrate that the restoration has been successful along with an assessment of stream structure and habitat.
- Plans showing location and design of proposed enhancements were not provided to EPA. The proposed work cannot be fully evaluated without detailed plans. The proposed CMP should clearly show what will be done and how it will be accomplished in both the on-site restoration and offsite compensation sites. The plans should clearly show the existing and proposed conditions, and should demonstrate that the impacted resources will be adequately restored. Specific plan views, cross sections, and profiles of the existing and proposed conditions should be provided.
- The CMP does not show where the realigned road will be relocated and how the former road will be made impassable to traffic. Any additional impacts to waters for the new alignment of the road should also be detailed in the narrative and plans.
- The plan indicates “After re-construction of the channels, substrate compositions should develop to be similar to those percentages observed during pre-mining conditions.” It is not clear how this is expected to occur, or how long it would take. A stable channel should be constructed using suitable native materials. The size, composition, and source of the substrate should be indicated.
- As noted in the CMP, plantings are a critical component of restoration or enhancement and are important in streambank stability, water quality, and nutrient cycling. Both the functional assessment methodologies and the RBP place significant value on streamside vegetation, especially trees. Therefore, a specific re-vegetation plan should be submitted for buffer areas and for stabilization. The species that will be planted for each restoration or enhancement area should be identified by scientific name, and the size and number of each should be identified. The selected plants should also be suited to the conditions of the restoration area. The plan should also include any soil preparation needed, such as soil amendments or tilling to support the proposed plantings in the restoration.
- The planting and seeding lists should reflect vegetation native to the area and should not include invasive plants. For example, the seeding recommendations in Tables 12 and 13 include crown vetch, Austrian pine, Scotch pine, red pine, and other nonnative species. Seed mixes for restoration of native plant communities should be used.

Maintenance, Monitoring, and Site Protection

- The application does not include a deed restriction, easements, or other measures for site protection beyond the 5-year monitoring period. This leaves considerable uncertainty as to the viability of mitigative efforts. The Compensatory Mitigation for Losses of Aquatic Resources clearly indicates that the “aquatic habitats, riparian areas, buffers, and uplands that comprise the overall compensatory mitigation project must be provided long-term protection through real estate instruments or other available mechanisms, as appropriate” [§332.7(a)(1)]. Protection of the proposed mitigation should be obtained prior to permit issuance or an alternative mitigation plan should be presented.
- In order to make sure that the channels are stable and riparian vegetation becomes established as predicted, EPA recommends that the mitigation be monitored for a minimum of 10 years post-construction.

- The CMP lacks a long term management plan. The section labeled “Long Term Management Plan” states only that the applicant will responsible until success criteria have been verified by the District Engineer.
- The “Turkey Creek and Level 3 Stream Restoration” section of the CMP states that a plan to address deer browse “seems unrealistic.” Measures to address foreseeable common problems such deer browse should be included in the Adaptive Management plan.
- The Adaptive Management Plan indicates that prior to starting the mitigation, a stream restoration professional will perform a pre-construction inspection of the off-site work and will make changes as necessary to the plan. EPA agrees that this is a prudent measure; however, we recommend that the applicant contact USACE for approval prior to amending the mitigation plan. The USACE should determine whether any changes to the plan are “minor,” or whether any additional review or permitting is necessary.
- The proposed Adaptive Management Plan section of the CMP states: “If the applicant has executed the mitigation plan as authorized, and failure to meet a performance criteria or final success is deemed to be the result of conditions, circumstances, or events beyond the control of the applicant, or which could not have been reasonably foreseen, remedial measures may not necessarily be required by the District Engineer.” If the mitigation fails during the monitoring period, an alternative mitigation proposal is needed. Otherwise, a loss of resource will occur.